

**Ecosystem Alterations (EA) WORKING GROUP
Stellwagen Bank National Marine Sanctuary, Office Annex**

**Scituate, MA
8:30am to 5:45pm
26 February 2004**

MEETING SUMMARY

ACTION: Summary of Meeting Accepted

WG accepted the summary of the meeting held on January 12, 2004, as written.

ACTION: Language of Tapes Accepted

WG accepted the language for usage of the recorded meeting tapes as presented by David Wiley.

ACTION: Addition of a Paragraph of Intent and Preamble to Cable and Pipeline Options Documents

SBNMS staff will add a paragraph of intent to both the Cable Options and Pipeline Options.

Key Points:

1. Pipelines represent risk that is at least “an order of magnitude” above that posed by fiber optic cables
2. The applicant should provide funding for required investigations to the Sanctuary
3. If appropriate, Sanctuary scientists can conduct required research or research can be bid out through an open RFP process
4. The Sanctuary should oversee all research conducted

SBNMS staff will also write a preamble for the Cable Options and Pipeline Options.

ACTION: National Marine Sanctuary Program Staff to Answer Fishing Regulation Authority Question

SBNMS staff to arrange for a presentation on the authority of the SBNMS to regulate fishing within the Sanctuary. National Marine Sanctuary staff from Washington DC will be asked to provide the presentation.

ACTION: Document change in condition of the SBNMS since 1994

SBNMS staff to arrange for presentations addressing the suggestion by the WG that changes in fishing effort needed to be documented. It was suggested that, with regards to mobile fishing gear, the sanctuary is being less impacted at this time than at the time of designation.

ACTION: Next Meeting

The next Ecosystem Alteration WG meeting is scheduled for April 2, 2004.

AGREEMENT: Removal of Options 1 And 4

WG agreed to remove options 1 and 4 from both the Cable Options document and the Pipeline Options document.

AGREEMENT: Option 3 Added as Part of Option 2

WG agreed that Option 3 should be kept, and was added as part of Option 2.

AGREEMENT: Paragraph of Intent to be Added to Mobile Fishing Gear Recommendations

WG agrees to add a paragraph of intent to the Mobile Fishing Gear Recommendations that captures the current state of the Sanctuary in terms of biomass. Members of the WG felt that biomass has been increasing since 1994 and that this should be stated when making mobile fishing gear recommendations.

AGREEMENT: Continue Mobile Fishing Gear Recommendations Discussion at Next Meeting

Due to time constraints, the WG agreed to continue their discussion on mobile fishing gear recommendations at the next meeting.

Working Group Attendees (February 26, 2004):

Name	WG Seat / Affiliation	Attendance
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Porter Hoagland	WG Chair	Present
David Wiley	Team Lead (SBNMS)	Present
Ben Cowie-Haskell	Co-Lead (SBNMS)	Present
Michel J. Kaiser	Woods Hole Oceanographic Institution	Present
Robert Steneck	University of Maine	Not-Present
Les Watling	University of Maine	Not-Present
Bob Kenney	University of Rhode Island	Present
Chris Glass	Manomet Center for Conservation Sciences	Present
Frank Mirarchi	Commercial Fishing Industry	Present
Russell Sherman	Commercial Fishing Industry	Present
Phillip Michaud	Commercial Fishing Industry	Present
Mary Beth Tooley	Commercial Fishing Industry	Present
Richard Ruais	Commercial Fishing Industry	Present
Bruce Munson	Recreational Fishing	Present
Jud Crawford	Conservation Law Foundation	Present
Danielle Luttenburg	Environmental Defense	Not-Present
Robert Buchsbaum	MA Audubon Society	Present
Rachael Taylor	The Nature Conservancy	Not-Present
Stormy Mayo	Center for Coastal Studies	Present
Susan Murphy	NMFS	Present
Leslie Ann McGee	NEFMC	Present
Susan Snow-Cotter	MACZM	Not-Present
Jason Burtner	Alternate for Susan Snow-Cotter	Present
Technical Advisors		
Richard Taylor		Present
Alan Micheals		Not-Present
David Pierce		Not-Present
James Lindholm		Not-Present
Others Present		
Timothy Feehan	PSGS	Present
Craig MacDonald	SBNMS	Present
Chip Ryther	CR Environmental	Present
Bruce Estrella	MA DMF	Present
Ron Smolowitz	Coonamesset Farm	Present
David Stevenson	NMFS	Present

WELCOME, INTRODUCTIONS AND ADOPTION OF AGENDA

Porter Hoagland, Working Group (WG) Chair, opened the meeting and welcomed all members of the Ecosystem Alteration WG. After the opening comments, each attendee briefly introduced themselves. The meeting agenda was presented and set for the day. The Chair then called for the acceptance of the meeting summary from January 12, 2004. With no opposing comments, the meeting summary was accepted as written.

GROUND RULES FOR WORKING GROUP

The Chair reviewed original ground rules and provided new ground rules for the WG in order to help expedite meeting procedures (see below).

Timing of Meeting

In response to comments from WG members concerning time overruns during the last meeting, time keeping would be made for each agenda item. All presenters for the day were asked to keep presentations to the time scheduled on the agenda. Presenters would be warned when their time was complete.

Comment Process

WG members were asked to turn his or her name placard on end to signal their intent to make a comment or ask a question. The Chair would call upon those members wishing to comment in turn.

Decision-making Process

Recommendations from WG members would be made by agreement. Recommendations would be recorded and displayed via projector to ensure wording was correct. Agreements made by WG members would be captured in writing. If no agreement can be made, options would be captured in writing. Straw poles can be taken at any time to identify where the group stands on a particular issue. However, straw pole results will not be recorded.

Action Plan

David Wiley explained the framework for the action plan that the WG should be working on. The proposed action plan should contain:

- Introduction to issues including rationale for each issue identified by the WG
- Evaluation of existing regulations within the SBNMS
- Framework for action plan implementation including strategies, outcomes and activities.
- Rationales describing why the WG supported particular recommendations or portions of the working group supported particular options

The action plan will be created and approved by the WG before being sent to the SAC.

Language for Meeting Tapes

David Wiley informed the WG that the meeting would be recorded and a digital copy made to be available to WG member for review. The language explaining the terms of use for the recordings was displayed as follows:

Draft language to be read at the beginning of audio tapes:

The meetings are being recorded for educational and communication purposes only. In that context, the views of the participants reflect the spirit of scientific and policy debate and are not intended to be binding on the individuals or their organizations in other contexts or proceedings. In addition, they are recorded only for use by members of the Ecosystem Alteration Working Group and are not to be distributed outside of the group's membership.

The WG then accepted the language as written.

OLD BUSINESS AND ACTION ITEMS

David Wiley reviewed the action items identified during the last meeting. WG members were asked to provide input as necessary.

Statistical Summary Results of Comments

It was determined that no statistical summary of public comments results exist based on stakeholder groups. Instead, the Sanctuary provided a detailed breakdown of specific comments provided by the public. This breakdown can be found in Section one of the members' notebooks, starting on page 15.

Presentation Concerning Effects of Fishing Activity on Benthic Habitats

Leslie Ann McGee presented information on the effects of fishing activity on benthic habitats. This presentation was given during this meeting and is summarized in the section titled **PRESENTATION SESSION II** in this summary.

Extent of Sea Plow Effects

In Meeting 1, Tycho Industries questions the Sanctuary's calculations on the total impact to the seabed from the use of a seaplow to install the fiber optic cable in the Sanctuary. Tycho has not provided an alternative calculation.

Information on Pipeline

Bruce Estrella presented information on ecosystem impacts of the Nahant Pipeline. This presentation was given during this meeting and is summarized in the section titled **PRESENTATION SESSION I** in this summary.

Overlap with Water Quality Working Group

Dave Wiley contacted Judy Pederson, Chair, Water Quality Working Group. She summarized her group's intentions relative to some of the Ecosystem Alterations WG issues as follows:

- Ocean Dumping/Dredge Material: The water quality group will focus on what contaminants get into sediments and what material gets back into the water column, not how contaminants might move from the water into organisms or move through the food web.
- Pollution: The water quality group will focus on what pollutants might be in the Sanctuary area and where they might be coming from, less on how pollutants move through the food web.
- Mariculture: Only in general terms, re: pollution
- Exotic Species: The water quality group will focus on a ballast water perspective. Focus will be on what species might be coming in via ballast water, not hull transported organisms, and not how the organisms become distributed once they are in the Sanctuary.

Disposal of Plastic Materials Retrieved from Sanctuary Waters By Vessels Fishing Within the SBNMS

Dave Wiley and Frank Mirarchi discussed the possibility of developing a proposal for funding to address the issue. This proposal has been discussed with the North East Consortium (NEC) and could potentially be submitted to that group. The discussion with the NEC is ongoing.

Authority of SBNMS to Regulate Fishing Within the Sanctuary

NOAA Headquarters will need to be consulted to properly deal with the issue of the SBNMS's authority to regulate fishing within the Sanctuary. Bruce Munson briefly presents findings on this issue and is summarized in the section titled **PRESENTATION II** in this summary.

PRESENTATION SESSION I

Oceanic Pipelines

Bruce Estrella, with the MA Department of Marine Fisheries, presented an in-depth look at the Nahant Pipeline, explaining impacts on species and habitat, as well as post-impact recovery.

Impacts on Species

The pipeline itself can have effects on large benthic organisms. An issue of particular concern was the effect of the pipeline on lobster migration. Under contract, the pipeline should have been completely buried in trenches, 3-10ft below the seafloor. However, three sections remain unburied and could pose problems to lobsters migrating to deeper water. At points, the pipeline is suspended and there is room for movement of organisms below the suspended section. Other areas were to be covered with cobble material to bury the exposed sections. It is expected that individuals can move over the cobble pile, but no observations have been made of this behavior. Lobsters and crabs have been observed utilizing exposed and cobble buried areas as shelter. These species move quickly into the area after the pipeline has been installed. Animals that move into trenches pre-burial can be killed during the burial process.

Timing of pipeline installation was planned to coincide with times of little spawning activity for fish species. Unfortunately, installation has been carried out during Winter Flounder spawning due to bad weather or other reasons for failing to complete the project during the accepted work window. This illustrates a potential difficulty. Contractors might agree to environmental protection measures pre-installation that they are unable to adhere to during the actual construction phase. In the case of the Nahant pipeline, the contractor paid fines and continued to violate the environmental protection standards.

Small benthic organisms can be killed or removed during pipeline installation. Slow moving, attached or burrowing organisms are at highest risk when the 20-50 ft. wide trench is being dredged. Trench width is large and variable due to different bottom types and the error associated with setting the pipeline into the trench itself. Trenches for cable lines are considerably smaller. Suspended matter, forming a plume originating from the dredge site, can cover large areas. This can bury small organisms, clog fish gills, interfere with prey availability, and potentially interfere with egg and larval distribution. These effects can vary by species. Plumes of this type are associated more with pipeline burying activity.

Impacts on Habitat

During dredging and installation of the pipeline, the working barge is anchored at many points. Each anchor and associated chain can impact benthic habitats. Though small in area (10 acres), anchors and chains can drag through habitat dislodging and killing or injuring benthic organisms. Dredging itself has obvious impacts associated with the removal of material.

Breaks in the pipeline could have obvious impacts. Oil pipelines that break or leak would result in an oil spill with associated environmental harm. Breaks in natural gas pipelines are believed to have less, but not negligible, impact. Natural gas should bubble to the surface while oil has the potential to emulsify.

Post-Impact Recovery

Impacted areas, under contract, must be repaired to bring the habitat back to pre-impact state. Bottom type in the impacted areas must be replaced with comparable type. In other words, sand is replaced with sand, mud is replaced with mud, and cobble is replaced with cobble.

Impacted areas show differing recovery rates. In hard bottom, large, mobile organisms repopulate quickly using the new cobble piles for shelter. Soft bottom types show longer recovery periods. In these cases, sediment structure can be altered and slow moving or attached residents are killed or removed. Shallow, soft sediment habitats have show recovery within 6 months to 1 year. Deep, soft sediment habitats can take 5-6 years.

Questions & Answers

Question 1: The pipes in the pipeline are made out of what type of material?

Answer: Pipes are made of steel covered by concrete. Lengths of pipe are joined on barges during pipeline installation and covered with concrete to add in weighing down the pipeline and settling it into the trench.

Question 2: During construction, was research done to ascertain the extent of sediment plumes, such as collection units or divers to measure settling material in areas away from the plume origin?

Answer: No. Experimentation of this sort was not done.

Question 3: Can the impacts be justified, or are the effects simply weighed against the “common good” for society?

Answer: No justification is known. This type of question is better directed at those who make the decisions about the need for siting a pipeline to supply natural gas to the New England market.

CABLE AND PIPELINE AGREEMENTS, RECOMMENDATIONS OR OPTIONS

Two documents, one for cables and one for pipelines, listing four options each were displayed to the WG. Members were asked to openly discuss and edit both documents. It was decided that, since the documents only differed by substituting cable for pipeline, both documents could be edited at the same time.

Issues raised during the review session are noted below. Lines from the options document are presented in boldface type.

Option 1

Cables and pipelines are prohibited activities within the SBNMS. Therefore, they should not be allowed under any circumstances.

Option 1 would recommend prohibition of all cables and pipelines from the SBNMS. All cables and pipelines would be forced to avoid the SBNMS.

Discussion: The Sanctuary has been recognized as an attractive area for cables and pipelines because it partially blocks the entrance to the city of Boston. While there was sentiment among some for a complete prohibition, there was also concern that if cables and pipelines were prohibited in the Sanctuary, they might be routed through equally important habitat outside the Sanctuary. Therefore allowing industry a Sanctuary option might cause less overall environmental harm if the distance were shorter or less vulnerable areas existed inside the

Sanctuary. Allowing cables and pipelines in the SBNMS might also provide for better oversight of their installation and other impacts than could be brought to bear on other sites.

At the end of the discussion the group agreed that although cables and pipelines were not activities that should be promoted in the Sanctuary, a complete, non-negotiable prohibition might not be appropriate and removed option 1 from further consideration.

Option 2

Cables and pipelines are a prohibited activity. However, special use permits can be issued by the sanctuary following guidelines published in NOAA's draft Fed Reg notice (Vol. 65, No164, Aug. 23 2000).

Discussion: NOAA has issued a draft Federal Register Notice containing guidelines with regards to the issuance of special use permits for cables within sanctuaries and the group spent considerable time discussing various aspects of these guidelines. Although the group had previously agreed that cables and pipelines should be considered separately because pipelines represented a far greater risk than cables, they agreed that they would consider them together with the caveat that it be noted that pipelines should be held to a far greater standard than cables.

This includes the following:

NOAA would identify fragile areas where cable would be prohibited under any circumstances:

- **Rocky, hard bottom areas where cable could not be buried;**
- **Coral reefs;**
- **Sea grass;**
- **Mangroves;**
- **Endangers species (ES) habitat;**
- **“No Take” zones or “Ecological Reserves”.**

Minimum criteria to be met before cable is considered:

- **No feasible alternative**

Discussion: The group discussed the “no feasible alternative” concept as in cables and pipelines would be allowed in the sanctuary if there were no feasible alternative. The group was very concerned about such language because industry applicants often defined alternatives and could structure proposals identifying no feasible alternatives to the sanctuary route. However, did that just mean that the Sanctuary was a less expensive route, or that it was impossible to route the project through alternative areas, or that there would be less environmental harm by going through the Sanctuary? The group considered providing specific corridors through the Sanctuary by identifying areas that would have the least environmental impact associated with them. This raised concerns because of the potential to promote rather than discourage the Sanctuary as a site; a “build it and they will come” scenario. The group was also concerned that it can become difficult to hold industry to pre-agreed safety measures, e.g., the effects on winter flounder spawning in the case of laying the pipeline in Nahant. It was determined by the WG to leave the definition of “feasible” vague for all alternatives. The definition should be interpreted to imply that ecological constraints be the first consideration, followed by economic constraints.

- **Impact to sanctuary resources are negligible and short-term**

Discussion: The WG discussed whether the wording should be “minimal and temporary” rather than “negligible and short term”. The latter may be more sensible because these terms are defined under the Sustainable Fisheries Act, whereas no legal definition currently exists for “minimal and temporary.” Moreover, in many cases, the extent of the resources within the SBNMS is still not known, it would be difficult to determine whether impacts were minimal and temporary. The group felt that pre and post scientific studies would have to be carried out to help make such determinations. Cost-benefit analysis must also be performed for all alternatives to help determine resource impacts. The group also agreed that cumulative impacts must also be taken into consideration.

- **Impacts to fishing interest;**

Discussion: The WG accepted this condition without discussion.

- **Appropriate mitigation and monitoring is included and paid for by proponent;**

Discussion: As stated above, the WG felt that research on conditions at the proposed site must be carried out pre- and post-construction. Pre-construction research was seen as needed in order to develop baseline data about the habitat being potentially disturbed. Post-construction research was needed to assess potential impacts of the construction. It was also agreed that research would have to be conducted at set periods after construction to monitor the site for long-term impacts and restoration. Such research would be paid by the applicant. Funds would be provided to the Sanctuary which could, if appropriate, use Sanctuary researchers or hire outside contractors through an open and competitive RFP process. The group did not support allowing the applicant to choose its own contractor for the research, as it was felt that this could result in a conflict of interest.

- **Applicant agrees to remove all or part of the cable at the end of its life if determined appropriate by NOAA;**

Discussion: The WG accepted this condition with minor discussion

- **Pursuant to sanctuary regulation, a fee will be assessed for any approved project.**

Discussion: This proposal was modeled after conditions placed on applicants in the United Kingdom. The WG did not come to a decision on the adoption of this condition. It was noted that the United Kingdom requires an application fee, but does not use the receipts to fund ecological research.

Proposals considered on a case-by-case basis. The existence of one cable in a sanctuary does not mean others will be allowed.

- **Special use permits authorize NOAA to assess fees for the conduct of permitted activities.**
- **Cost incurred or expected to be incurred in issuing the permit**

- **Costs incurred, or expected to be incurred, as a direct result of the conduct of the permitted activity, including monitoring costs**

Discussion: See above discussion

- **Cost that represents the *Fair Market Value* of use of the Sanctuary resource**

Discussion: WG members accepted the condition of Fair Market Value. The WG also agreed that any economic losses associated with impacts on “non-market” Sanctuary resources should be considered when assessing a fair market value.

Option 3

2 plus the need for a bond to be posted prior to the issuance of a special use permit.

Option 3 contained all recommendations contained in Option 2, plus requiring a bond to be posted prior to the issuance of a special use permit.

Discussion: WG members were concerned that applicants and existing or subsequent owners should be responsible for any environmental damages that result from the siting of a cable or pipeline and that they be responsible for removing the cable or pipeline at the end of its useful life. To accomplish this, the group agreed that a “performance bond” should be posted by companies. This accountability would include conditions accepted as part of construction agreement and environmental consequences resulting from inadequate construction or engineering.

It was agreed that the performance bond concept developed in Option 3 should be added to Option 2 and that Option 3 should be removed.

Option 4

Cables and pipelines should not be a prohibited activity. As trustees of the public good, the sanctuary should allow passage of cables if the sanctuary offers the preferred route.

Discussion: The WG discussed that cables and pipelines did provide valuable services to the public and that would be a consideration when considering special use permits under Option 2. The WG agreed to remove Option 4.

PRESENTATION SESSION II

NEFMC Summary of Essential Fish Habitat, Gear Effects Evaluation & Adverse Impact Determination

Leslie Ann McGee, from the New England Fisheries Management Council, and Dr. David Stevenson, from the National Marine Fisheries Service, gave a comprehensive presentation that provided an explanation of essential fish habitat. Fishing gear effects from around the world and the determination of adverse impacts were summarized as well.

Essential Fish Habitat

Congress, in the Magnuson-Stevens Fishery Conservation and Management Act, defined essential fish habitat (EFH) as those waters and substrate necessary to fish for spawning, breeding, feeding, or growth

to maturity. The New England Fishery Management Council has identified EFH for all species that the Council manages.

Gear Types, Effects, and Concerns

Effects of fishing on benthic habitats in New England can be summarized by looking at experiments that have already been conducted. The National Resource Council (NRC) Report, “Effects of Trawling and Dredging on Seafloor Habitat”, and the Pew Report, “Shifting Gears”, both describe effects of fishing gear on seafloor habitat. Both reports show that trawls and dredges can result in reduced habitat complexity, changes in benthic communities, damage or remove organisms, and damage areas with gravel habitats. Dredges and trawls can smooth bedforms, re-suspend sediments, reduce the number of species, and reduce nutrients and microbial activity on sand and mud bottoms. In hard bottom and living habitats, dredges and trawls reduce species in interstices of rocks attached to the seafloor.

A new Technical Report by NMFS will report the results of many studies, summarizing and grouping the effects on EFH by gear, bottom type and by species. This report identifies habitat and species vulnerabilities to fishing gear used in New England. The criteria used to define vulnerability are shelter, food availability, and whether EFH for each fish species was actually being fished.

The New England Region Gear Effects Workshop also identified the effects of fishing gear on fish habitat. During this workshop, priorities for habitat type, impact type, gear and gear and habitat type were identified. The highest priorities were:

- Habitat Type – Gravel habitats were most important due to a higher sensitivity to removal of physical features and impacts on physical and biological structure from mobile fishing gear.
- Impact Type – Impacts on biological structure were most important based on sand, mud and gravel habitat types.
- Gear – Otter trawls resulted in the most removal of physical features and impacts on physical and biological structure.
- Gear and Habitat Type – Otter trawls and scallop dredges were reported to have the highest removal of physical features and impacts on physical and biological structure across gravel, mud, and sand habitats.

Management Measures, Authority, and Research Needs

The most common measures used are closed areas, gear modifications, and effort reductions. All three have been implemented in recent measures such as Scallop Amendment 10, Groundfish Amendment 13, and Monkfish measures currently under consideration. Even with these management measures in place, more research is needed. Research needs on benthic habitat are as follows:

- Assess effects of specific mobile bottom gear types along a gradient of effort, on specific habitat types.
- Effects on ecosystems as compared to other anthropogenic impacts and natural perturbations.
- Determine recovery rates for various habitat types
- Identify fishing grounds and submerged aquatic vegetation distributions to locate where the two overlap and identify changes in beds over time

High-resolution benthic/sediment mapping of the Mid-Atlantic and New England areas is needed to help characterize habitat. Determining the functional value of various habitat types is also a needed study on specific habitat.

Questions & Answers

Question 1: With groundfish closed areas, what can happen with them?

Answer: Groundfish closed areas have the possibility of being opened when stocks recover. Recently proposed habitat closed areas would remain closed indefinitely to protect Essential Fish Habitat (EFH).

Question 2: Does EFH cover things like sponges in New England?

Answer: EFH can cover species that effect managed species, like bait. Things like sponges and coral have not been included in EFH. Further review may include coral.

Question 3: Scallopers are reducing bottom time, is effort being accounted for?

Answer: For scallopers, effort is being accounted for by looking at area swept. The first pass, the pass of the dredge that causes the most damage, has the most effect on habitat.

Question 4: Is the level of information for the effects of scallop dredges on Stellwagen Bank, looking at areas presumed fished with side-scan sonar, good enough?

Answer: No. Not many studies have been done. Also, much of the area is disturbed. Research areas need to be relatively undisturbed. When reading the NOAA Technical Memo, the reader should go back to the original literature to make conclusions.

Question 5: Otter trawls seem to be working mud bottom. Is mud bottom less of a concern?

Answer: Mud is of concern. Deep, low energy muddy bottom is vulnerable to disturbance. Fishing minimally impacts shallow, high energy sandy bottom.

Near Term Observations of the Effect of Smooth Bottom Net Trawl Fishing Gear on the Seabed

Frank Mirarchi, commercial fisherman, presented information from recent experiments he conducted, in conjunction with CR Environmental, on the effects of net trawl fishing gear on the seabed. The trials were conducted in two fishing areas, Mud Hole and Little Tow.

Effects of Trawling on Geophysical Characteristics

Gear impacts were more visible in the softer sediment of Mud Hole. Trawl doors caused deep furrows and ridges (3-6 inches) that attracted rock crabs and lobsters. Video observations indicated that untrawled seabed, especially at Mud Hole, had a hummocky appearance while recently trawled seabed was generally smoother at times with polychaete tubes exposed. The coarser Little Tow bottom was more variable and the physical impacts of trawling were less visible.

Effects of Trawling on the Macrobenthic Community

Both sites had diverse macrobenthic communities and were similar in richness and abundance to untrawled sites studied in 30 m. of water off Gloucester, MA. The difference in bottom substrate between the sites resulted in some differences in benthic fauna. *Prionospio steenstrupi*, a polychaete, was dominant in the finer sediments of Mud Hole and Little Tow. *Unicola inermis*, an amphipod, was dominant in the sands of Little Tow. There was no difference in infaunal diversity, richness or composition following six passes of the smooth bottom trawl. There was a positive correlation of species

richness with the percentage of silt/clay and a negative correlation of species richness with the percentage of coarse sand.

Effects of Trawling on the Fish Community

The dominant bottom fish at Mud Hole and Little Tow were yellowtail and winter flounder. Dominant bycatch included dogfish, rock crabs and skate. There was a trend for flounder catch to decline with trawling over time. Stomach contents of both flounder species reflected the benthic infaunal community composition. The dominant prey item for both flounder species was the dominant spionid polychaete. Both flounder species showed some preferential selection for amphipods.

Conclusions

The most significant impacts observed on soft bottom habitat at Mud Hole and Little Tow were those on the physical habitat by trawl doors. These were more visible in the lower energy, finer grained bottom at Mud Hole. The most immediate biological effect was the direct removal of large, epibenthic organisms by the trawl, particularly crabs and flatfish. Less obvious effects were the apparent exposure of polychaete worm tubes by the sweep of the net, potentially increasing their vulnerability to predation. For the sites studied, no significant impacts of otter trawling with the smooth bottom trawl gear on the benthic macrofaunal community was detected.

At both sites, but especially at Little Tow, the habitat is naturally dynamic and shows changes in bottom characteristics irrespective of trawling activity. It is likely that the impacts of trawling on the infaunal benthic communities at Little Tow in particular, and also at Mud Hole, are comparable in magnitude to these natural disturbances. Trawl door furrows, however, may not be comparable to this natural disturbance.

Questions & Answers

Question 1: This study compared an area that was chronically fished to an area less frequently fished. Both areas are impacted and the community had already been shaped by the impact. How can you reach your conclusions without a controls site that was not impacted?

Answer: The study was done to determine what level of fishing could be done, but continue to keep the area productive. Other studies have concluded that productivity can increase in fished areas, though this could just be a movement of fish into the area.

Effects of Scallop Gear on the Seabed

Ron Smolowitz, from Coonamesset Farm, provided commentary to a video that described the effects of scallop dredges on the seabed.

Effects on Scallop Grounds

The dredge path across traditional scallop bottom is difficult to find using video but can be determined using side-scan sonar. Video observations show the dredge moving across the surface of the seabed, making contact with surface sediment and large rocks. Sandy/silt material is suspended with the passage of the dredge, but this quickly settles. The catch is usually clean, meaning mostly scallops. In areas of high scallop abundance, a rotational harvest technique can be implemented, reducing dredge bottom time and effort, yet maximizing scallop catch.

Effects on Sandy Bottom

A scallop dredge was filmed to determine the effects of the dredge on sand. The Dredge path can be seen in video and is easily picked up by side-scan sonar. A layer of “bottom fluff” is swept away by the passage of the dredge. This layer does return quickly.

Experimental Observations

The traditional scallop dredge has been altered for some experimentation. Utilization of larger twine-top mesh size has resulted in a decrease of bycatch. Modifications to the space between the depressor plate and cutting bar using metal rings can result in lighter dredge designs. These designs take some fine tuning to specific bottom types, but once tuned they work very well.

For analysis on abundance of scallops, a drop camera technique has been implemented. This results in a finer detailed analysis with very good results. Recent developments in this technique have become instrumental in scallop abundance assessment. Usage of the drop camera can get habitat results down to 1 min. squares. Model results using 10 min. squares can miss seasonality and transition zones. Stellwagen Bank could benefit from such finer detail.

Questions & Answers

Question 1: Has the percentage of bottom that scallopers actually fish been determined?

Answer: There are a few ways to look at this. When compared out to the EEZ using 10 min. squares, it is roughly 7%

Question 1: Why was the Western Gulf of Maine (WGOM) Closure Area created?

Answer: It was originally created to reduce mortality of groundfish, mainly cod. It was done to remove some fishing ground and cover a supposed cod migration route. Habitat was not a concern.

Impacts of Mobile Gear (Otter Trawl and Scallop Dredge) on the Seabed

Michel Kaiser, from University of Wales, presented results from work done in the United Kingdom. Experiments were carried out to test the impact of mobile gear on the seabed and projected recovery time of the impacted habitat. A meta-analysis was also done on current, research to help explain impact of mobile gear on particular habitat types.

General Ecological Considerations

Stable, low energy environments tend to have stable, slow growing organisms with larger body sizes. Unstable, high energy environments tend to have fast growing, mobile organisms with small body size. Some unstable environments can be made more stable by organisms that add structure like worms or mussels. Stable environments are more vulnerable to fishing impacts.

Recovery after impact can be dependent on the scale of the impact. Small-scale disturbances can recover quickly. A large disturbance like a hurricane can result in longer recovery times. Fishing can combine with natural disturbances with different results. If fishing is combined with large natural disturbances, the environment is less stable. Impacts from fishing would be less important. On the other hand, fishing combined with no natural disturbances can have greater impact, since the environment is quite stable. Recovery also consists of two parts, habitat recovery and biological recovery. Habitat recovery must be concurrent as biological recovery begins.

Experiments

Experiments have been conducted using fishing across a range of sediment types. Using the results from these experiments, the recovery time for specific sediment types can be predicted with a high degree of correlation between habitat and biological recovery. Recovery in coarse sand, being mainly physical in nature, is quite quick. Longer recovery time is needed with mud, which has many chemical processes associated with it. Muddy sand, a stable hybrid, takes the longest to recover.

Meta-Analysis of Current Work

Studies around the world show effects of otter trawls and scallop dredges across a range of sediment types. Careful analysis of these experiments can produce predictions on recovery time based on gear and sediment type. Unfortunately, much of the research is done only over the course of 3-5 years. Recovery times that take longer need to be extrapolated.

A few passes, or the first hit, can reduce the productivity of an area. However, additional fishing in the same area will not affect the area to the same degree. Productivity in fished areas might be lower than in undisturbed locations, but commercial fishing may still be viable in these areas. The behavior of fishermen should also be characterized. Fishermen fish where they know, where traditional fishing has occurred and fishing is productive. It may be important to designate areas as fishing areas where fishermen should fish. Area closures may force fishermen to move to areas that are unknown and most likely un-fished. Closed areas could potentially redistribute effort and disturb areas that have not been impacted in the past.

Meta-analysis suggested that scallop dredges and otter trawls have the greatest benthic habitat impact of commonly used fishing gear and that most of the damage occurs during the first few passes (tows) of the gear. Analysis also shows that habitat recovery times range from weeks to years depending on the substrate (see above) and that once a habitat has been degraded by initial fishing pressure, it is not continuously degraded by continued fishing pressure. Although continued fishing pressure does not allow the habitat to recover, it still retains sufficient productivity to remain viable as a commercial fishery. Unless a fishery is in an expansion phase, this acts to fix fishing activity in historic areas, allowing non-fished areas to remain untouched.

This suggests that the use of closed areas as a management tool can result in unforeseen consequences to marine environments. Closed areas can redistribute effort to areas not previously fished, likely causing considerable habitat damage during the initial tows. However, management through effort reduction tends to cause the remaining fishery to contract into historic core fishing grounds, leaving more pristine habitats untouched. The implication of this is that effort reduction can be better than closed areas in terms of environmental protection and that, instead of creating protected areas, managers might consider zoning specific areas for fishing.

Management Implications

Effort reduction might be more effective than closures in terms of environmental protection. Closed areas force fisherman to redistribute effort to areas not previously fished or impacted. Because most environmental impact occur in the first few tows, such redistribution can be detrimental. Once an area has been fished, continued fishing might keep the area in a state of non-recovery, but does not necessarily continue to degrade the area. This state often retains its productivity from a fishery standpoint and fixes fisheries in place, thereby maintaining the non-fished status of other area. Instead of creating protected areas managers might consider zoning specific areas for fishing.

Questions & Answers

Question 1: What about decommissioning of vessels, could that cause a concentration of effort?

Answer: This is tough to answer. It is possible to remove a bunch of small boats from a fishery, but get a large factory trawler in return. This could potentially move the problem somewhere else.

Question 2: Can traditional fishing grounds be kept open and still determine recovery time?

Answer: This study did not look at recovery in fished areas.

Question 3: Is this proposing effort reduction instead of closed areas?

Answer: Effort has to be controlled properly. Unfortunately, political gain can interfere with proper fisheries management.

AUTHORITY OF SBNMS TO REGULATE FISHING WITHIN THE SANCTUARY

Bruce Munson, recreational fishing representative, provided his views concerning the authority of the SBNMS to regulate fishing within the sanctuary. He based his views on his in-depth look at present and passed past documents covering the issue of the SBNMS's authority to regulate fishing within the sanctuary. His interpretation is that that Federal Management Councils would regulate fishing, and this would not change with the introduction of the Sanctuary. The sanctuary Designation Document does not list fishing under prohibited activities. If fishing regulations were proposed, the Designation Document would have to be changed. SBNMS can recommend restrictions to the Council, but the determination, based on his interpretations of the documents, is that the SBNMS does not have authority to regulate fishing within the Sanctuary.

Comment: These things can start small and become a problem. When the SBNMS was started, the central issue was how fishing would be handled to bring the fishing industry on board. Word came down from the Sanctuary Office that fisheries would not be regulated. This became the basis for the SBNMS. The faith must be kept. The regulation of fishing should not even be considered unless fishing became a very serious problem.

Comment: The ecosystem covering the SBNMS has probably not changed since 1920. In recent years, Stellwagen Bank has been fished more responsibly. The Bank may even be improving at this time. Some gear hasn't been fished there in years. Stellwagen Bank is in good shape.

Comment: A unilateralist view could be dangerous, as it does not take into consideration the surrounding context. The SBNMS does not exist in isolation. If the SBNMS is closed to fishing, the effort would be redirected somewhere else. What is needed is an approach that provides uniform protection to the ecosystem. Look at the WGOM Closure. Fishermen would like to fish the muddy basins there again. There is ample room for trade-offs. The closure was created to rebuild cod, now we can look at interactions between habitat types.

The WG agreed that it was appropriate for a representative from the NMSP to give a presentation concerning this issue in the future.

ECOSYSTEM ALTERATION IMPACTS OF MOBILE FISHING GEAR: AGREEMENTS, RECOMMENDATIONS OR OPTIONS

The Chair opened the discussion to discuss ecosystem impacts of mobile fishing gear. The WG was encouraged to bring up recommendations they thought important to be recorded.

Issues raised during the review session are noted below.

Proposed Recommendation 1

Recommendation that the SAC develop a proposal designating the SBNMS as a Habitat Area of Particular Concern (HAPC), or portions of it as HAPC, potentially as part of the NEFMC Omnibus EFH Amendment.

Issue 1: HAPC Is Not a Closure

Concern was raised about HAPC working as closure areas.

Discussion: The WG discussed how HAPC would be implemented in the Sanctuary. There was concern that HAPC would lead to closures to fishing. HAPC would designate areas that were more important than others. Restrictions on fishing would not be put in place but there would be a higher level of scrutiny, however, there could be restrictions on other areas. The recommendation was added to the straw-man list.

Proposed Recommendation 2

Recommendation that the SAC develop for the Council's consideration a proposal for dedicated habitat research areas within the Sanctuary, and in the context of existing and continuing conservation and management efforts in New England.

The recommendation was added to the straw-man list.

Proposed Recommendation 3

Recommendation to identify habitat types within SBNMS and set aside areas for research purposes.

Issue 1: Problems With Closures

Discussion: The WG discussed how fishermen are heavily restricted under current management. Fishermen are frustrated with the idea the possibility of more closures. Fishermen believed they were fishing with less impact than in the past. For example, much of the current whiting fishing is done with raised footrope trawls that are thought to have little impact on the benthic habitat. These types of gear modifications are encouraging, but WG members would like to see more research done. In the last two years, rolling closures have prevented fishing on parts of Stellwagen for 4 months of the year. These months are April, May, October, and November. It was suggested that this recommendation would be counter productive for this WG. However, it is difficult to do research without control areas. It was suggested that areas of this type should be made in areas already closed, like the WGOM Closure "sliver". However, all habitat types are not included in the "sliver". The recommendation was added to the straw-man list.

Proposed Recommendation 4

The Ecosystem Alteration WG should support the Council decision to remove bottom-tending mobile gear from WGOM Closure Area “sliver”.

The recommendation was added to the straw-man list.

Proposed Recommendation 5

Recommendation to Atlantic States Marine Fisheries Commission (ASMFC) to consider restrictions on lobster fishing in the WGOM Closure Area “sliver”.

The recommendation was added to the straw-man list.

Proposed Action Item

Recommendation to document change in condition of the SBNMS since 1994.

Issue 1: Document Fishing Effort

Discussion: The WG discussed how the SBNMS has changed since 1994. It was suggested that changes in fishing effort needed to be documented. It was suggested that, with regards to mobile fishing gear, the sanctuary is being less impacted at this time than at the time of designation. The group agreed that this possibility should be explored.

The WG came to agreement that more work would be needed to properly construct a list of recommendations. This list would also need to have a paragraph of intent added by the SBNMS staff. It was decided that this issue would be discussed again at the next meeting.

NEW BUSINESS**Action to bring in DC staff for Authority Question**

It was requested by the WG that an official from the NMSP be brought in to present on the SBNMS’s authority to regulate fishing within the Sanctuary.

Next Meeting

A call for dates for the next meeting was made. The next Ecosystem Alteration WG meeting is April 2, 2004.

FINAL COMMENTS

Meeting adjourned at 5:45 pm.



26 February

Meeting

**Gerry E. Studds Stellwagen Bank National Marine Sanctuary
Management Plan Review**

Ecosystem Alteration Working Group – Draft Agenda

Date: 26 February 2004

Location: Stellwagen Bank National Marine Sanctuary Office, Scituate, MA

TIME	TOPICS AND OBJECTIVES
8:00 – 8:15	Refresher on Rules, Structure of Action Plan, Time Keeper, Agreement
8:15 – 8:30	Case Study of Ecosystem Impacts of the Nahant Pipeline Presenter: Estrella, MADMF
8:30 – 8:45	Question for Estrella
8:45 – 9:15	Discussion of Cables & Pipelines Alternatives, Research Needs
9:15 – 9:30	Cable Agreements, Recommendations or Options
9:30 – 9:45	Pipeline Agreements, Recommendations or Options
9:45 – 10:00	Break -
10:00 – 10:45	NEFMC Summary of Essential Fish Habitat Gear Effect Evaluation & Adverse Impact Determination - Presenter: McGee
10:45 – 11:00	Questions
11:00 – 11:15	Near Term Observations of the Effect of Smooth Bottom Net Trawl Fishing Gear on the Seabed – Presenter: Frank Mirarchi, Boat Kathleen A. Mirirachi, Inc.
11:15 – 11:30	
11:30 – 11:45	Effects of Scallop Gear on the Seabed – Presenter: Smolowitz, CFarm
11:45 – 12:00	Questions
12:00 – 12:30	Impacts of Mobile Gear (Otter Trawl and Scallop Dredge) on the Seabed – Presenter: Kaiser, WHOI
12:30 – 12:45	Questions
12:45-1:15	Lunch
1:15 – 3:30	Ecosystem Alteration Impacts of Mobile Fishing Gear: Agreements, Recommendations or Options
3:30- 3:45	Break
3:45 – 5:30	Research Recommendations
5:30 – 5:45	Next Meeting